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JULY-AUGUST 1979

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The Macdonald Journal

JULY-AUGUST 1979

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Journal Jottings

The year is 1992. It's a cold, late winter night. You've been working on your books. Figuring all done, you have just realized that your farm is worth one million dollars. You check the figures again, yes, there is no doubt — $1,000,000! You shake your head, wander out to the kitchen, stir up the coals, put on a small piece of maple, and place the kettle on for a late cup of tea. Tea drunk, you go down cellar and throw a log on the furnace and retire for the evening. A million dollar farm and a wood stove and furnace — sounds incongruous, but it just could be possible. I quote from two different articles in this issue.

"In 1976, the average capital value per farm for all of Canada was $182,557, with capital values having increased an average of 19.6 per cent per year since 1971. At this rate of growth, the average investment per farm in 1986 would be $1,091,752! In Quebec, at the annual growth rate from 1971 to 1976, perhaps we can take some solace in the fact that we won't have farms worth a million dollars until 1992."

". . . Wood is there, if you want it, and more and more will be the only thing we can afford as OPEC and its like push oil prices beyond the limits of most of our pocketbooks. In the Canadian climate the use of wood for heating, as in the good old days, appears to be one of the best roads to renewable energy self-sufficiency. Do we have a choice?"

My opening paragraph is fiction, but there are a great many good, solid facts in both these articles "Million Dollar Farms!" and "The Fuel Wood Renaissance." Well worth reading as is the convocation address which was given in June by Gaétan Lussier, who is Deputy Minister of Agriculture Canada. Mr. Lussier's theme is a global one and if I may quote again, "In Ontario, Class 1 agricultural land is disappearing at the rate of 26 acres an hour. Some people put that figure as high as 33 acres an hour. Within our own domestic context this may seem acceptable. After all, we have so much land, and we have a population that has grown in the last five years from 22 to nearly 24 million. We need the extra space, we need the extra houses, the shopping centres, and the freeways. All I would say, at this point, is to remember that our 24 million have a very low rate of malnutrition when compared to the 450 million in the world whose lives are one constant search for the next meal." Good, thought-provoking reading.

Hazel M. Clarke.

Editorial

Each year the Faculty of Agriculture has the privilege of nominating an individual to be awarded an honorary doctorate degree at its spring convocation. This individual is invariably someone who has made a significant contribution to agriculture, and usually someone who has had a prior association with the Macdonald Campus.

On the second day of June, at the first convocation held in our new surroundings on the east part of the campus, we had the opportunity of witnessing the conferring of the degree, Doctor of Science, *Honoris Causa,* upon Mr. Gaétan Lussier, Deputy Minister, Agriculture Canada. In presenting Mr. Lussier to Chancellor Harrington, the following words were used to describe a young man whose accomplishments in the field of agriculture far exceed the normal expectations of a person of his age.

"The son of a farmer, Mr. Lussier was born and raised in Marieville, Quebec. Following primary and secondary education in Marieville and Montreal respectively, he entered the Oka Agricultural Institute and graduated with the B.S.A. degree in 1962 with the distinction of being the Lieutenant-Governor's Gold Medalist. McGill University is pleased to claim some responsibility for the professional development of Gaétan Lussier in that he was awarded the M.Sc. degree in 1964, the product of two years of study in the Department of Agronomy on the Macdonald Campus.

"In 1970, Mr. Lussier was named Assistant Deputy Minister of the Ministère de l'Agriculture du Québec, in considerable part the consequence of earlier successful efforts as a teacher at l'Institut de Technologie Agricole, St. Hyacinthe, as the technical advisor and director of promotions for eastern Canada for the American Potash Institute, and as an agricultural coordinator for the Richelieu region of Quebec. Mr. Lussier was promoted to Deputy Minister in 1971 and served Quebec agriculture in that capacity until 1977.

"During his tenure as Deputy Minister, Gaétan Lussier left a mark on the progress of agriculture in this province. Notably he influenced important programs in land drainage, land conservation and crop production, and was instrumental in narrowing the gap between the production of food and its utilization by the consumer. His promotion of the Dairy Herd Analysis Service and the Diploma in Agriculture program with the Ministère de l'Agriculture du Québec was of particular value to McGill University.

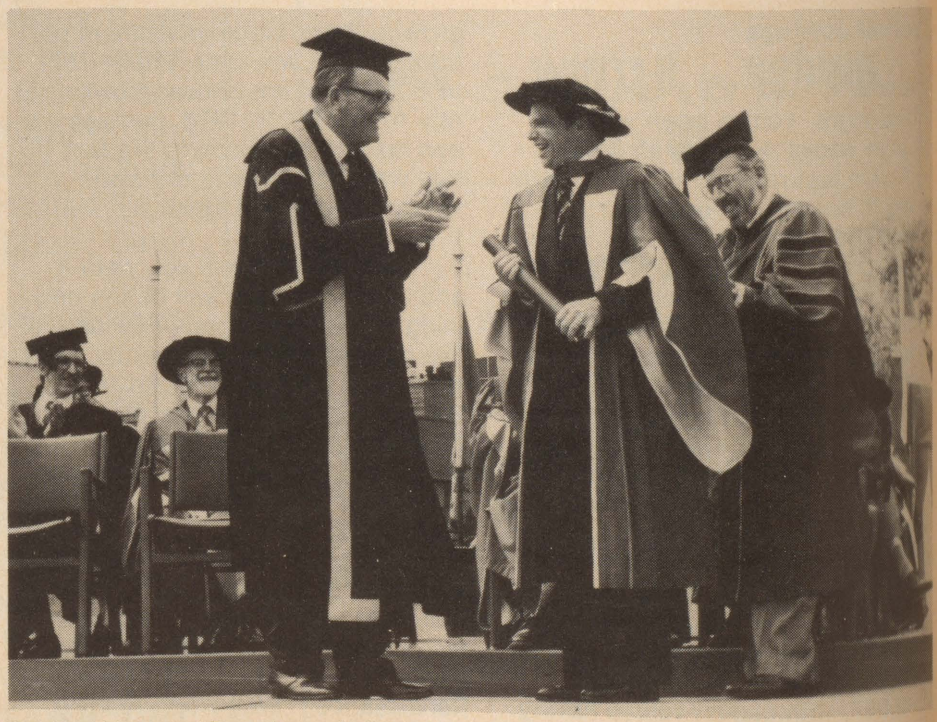
"Mr. Lussier's successes at the provincial level, along with his obvious understanding of the problems of agriculture at the national and international levels, resulted in his appointment in 1977 as Deputy Minister, Agriculture Canada. In the two short years he has been in Ottawa, he has succeeded in transforming Agriculture Canada into one of the outstanding federal departments and he has done it with skill and tact.

"The restructuring of Agriculture Canada into a truly corporate body capable of dealing with and of shaping the entire agriculture-food system in Canada has been one of Gaétan Lussier's major accomplishments. This, along with his influence upon the development of a national agricultural strategy, has furthered his ultimate vision of agriculture playing a key role as a unifying force in Canada. Although sensitive to the unique agricultural problems and strengths of each province, Mr. Lussier's work in Ottawa has demonstrated an understanding of the interdependence of these problems and strengths.

"Throughout his professional career, Gaétan Lussier has invariably been younger than the majority of the people who work for him. This has never proven to be a problem in view of his exceptional professional maturity, his accessibility to all levels of subordinates, his ability to communicate effectively, and his incisiveness in decision-making."

The Faculty of Agriculture was proud to have been associated with the honouring of Mr. Gaétan Lussier by our University. Following the conferring of the honorary degree, Mr. Lussier presented the convocation address to the graduating students. His address can be found in subsequent pages of this issue of the Journal.

L. E. Lloyd, Dean
Faculty of Agriculture



Drs. Touchburn and Estey (seated) obviously enjoying the pleasantries exchanged by Chancellor Harrington, Gaétan Lussier, who received an honorary degree, and Dr. Jean David.

The Fuel Wood Renaissance

by Professor A.R.C. Jones, Woodland Resources, Department of Renewable Resources

Many Canadians are rekindling an old flame — wood fires and wood heat. In fact, the firewood comeback has become a phenomenon of impressive proportions as sales of stoves, fireplaces, and fuel wood reach new highs across the country. Almost everyone is attempting to hedge their bets on home heating with oil and gas, as the costs of these products rise out of sight. Better designed stoves and the energy crisis of the early seventies helped to spark this changeover and generated a renewed interest in the potential of Canada's most abundant renewable energy source — wood.

The Good Old Days Are Back

One hundred years ago, nearly all houses used wood for heating and cooking. Today, less than two per cent of households rely on wood heat, although in remote communities the figures are much higher. Then, firewood was readily available, and every farm boy had to keep the kitchen wood box filled and the woodshed was a place to avoid at all costs. In those days cast-iron cooking and parlour stoves were quite unlike the modern airtight models. Those early stoves had voracious appetites for wood, much like todays's open fireplaces where vast amounts of heat go up the flue. It was almost impossible to damp the massive heaters down; thus the wood burnt rapidly and constant stoking was necessary.

Farm fuel wood sales have been in a long decline since around the 1880s. Just prior to the recent oil crisis, census date recorded continuing declines for most provinces in fuel wood sales. In 1960, Canadian farm fuel wood sales totalled 246,000 cords valued at $28 million, about one quarter of the production in 1950. The 1970 census showed 95,000 cords sold from all provinces worth $20 million, with Quebec farms selling nearly 60,000 cords of this total. In 1976, farm fuel wood production rose dramatically to nearly 1,058,000 cords with a total production from all provinces and territories of 1,623,000 cords. Quebec produces more than half the Canadian fuel wood total and is leading the trend back toward wood heat self-sufficiency. Firewood cut from Ontario Crown lands has risen from 6,300 cords in 1976 to 60,000 cords in 1978. It has been estimated that the 1979 cut will reach over 100,000 standard cords.

The fuel wood potential of the Canadian forests has just barely been scratched. There's a long way to go, particularly in urban areas where house construction and design makes conversion or the complementary use of wood heating difficult. It now appears that the present surplus fuel wood as well as wasted mill and forest residues in Canada is so great that its use to solve some of the critical firewood needs of the developing world does not seem such a wild idea.

Some Major Concerns

Converting a home to supplemental wood heating is not cheap; therefore, it is necessary to consider the total costs of such a venture. The relative fuel costs in any economic comparison often neglect the expense of purchasing, installing, and maintaining an additional heating unit. For those cutting their own wood, there are the extra costs of equipment and personal time. As J. Lassoie (1978) of New York's Cooperative Extension unit points out:

> at $3.00 per hour a winter's supply of firewood may be worth about $400 of an individual's time . . . Those that buy their firewood are tied to a supply and demand market just like those who rely on coal, gas, oil and electricity.

In Toronto, delivered prices for mixed, dry, 12-inch hardwood were advertized recently at $156 a full cord of 80 cubic feet and $45 per face or quarter cord. Lassoie suggests that:

> Firewood in most areas will always be a bit cheaper per BTU since it is less convenient than its fossil fuel counterparts . . . Those that do convert (to wood heat) need to make a long term commitment to paying more attention to their heating needs; otherwise a woodstove will be an expensive, passing fad.

The economics of firewood is most attractive to those who wish to harvest wood from their own lands as part of a woodlot management program.

The removal of valuable timber crop trees for fuel wood is one of the chief concerns of the forest industry, which can pay higher prices for this scarce material than it is worth for heating purposes. Professional help is recommended to assist landowners in choosing the cull, defective, and crowded trees to remove for fuel wood purposes from those that should be left for the future or marked for sale to the forest industry (see Jones, 1979).

Another concern is the occupational hazards of timber harvesting. It is the second most dangerous profession after mining, so that safe chain saw use, proper tree felling, and wood splitting techniques require many hours of practice and experience. Hydraulic wood splitters take some of the hazards and much of the hard work out of fuel wood preparation but try to rent a splitter first to compare the variety of models available. Tree cutting and wood splitting is hard, dangerous work. Even the experts get hurt at times so treat the basic tools with the respect they deserve.

A third major worry to those forecasting the future, expanded use of forest biomass (the above ground portion of all woody vegetation) as a renewable energy source is the

nutrient drain this total tree harvesting operation has on future forest production. Many environmental and social consequences must also be considered.

The repeated cutting and scavenging for fuel wood in the developing countries of Africa, Asia, and Latin America provide some ominous examples of what can happen to the regenerative capacity of forest land if its total products are continuously removed. Eckholm (1975) calls it "the real energy crisis" as

> more than a third of the world's people daily scramble to find the wood they need to cook dinner . . . The results are soaring wood prices, a growing drain on incomes and physical energies in order to satisfy basic fuel needs, a costly diversion of animal manures to cooking food rather than producing it, and an ecologically disastrous spread of treeless landscapes.

Fourteen million acres of new desert is added each year to the world's total by such drastic land-use practices in areas where overpopulation is rampant.

In reputedly wood-rich Canada some of the experts are worried as to the extent the forest resource can supply all the uses now being predicted for it. There are many forms of renewable energy that can be substituted for the increasingly scarce fossil fuels. This renewable energy can be produced from forest biomass available from mill residues, forest residues, and from fuel wood produced from non-commercial tree species and energy plantations. The end uses and economies of the conversion of these current waste materials to electricity generation, low BTU gasification and to methanol production were examined recently by Love and Overend (1978). The actual cut of wood products (of which fuel wood contributes about four per cent to the energy supply) now takes about 55 per cent of the total possible annual harvest. This cut has an energy content of about one eighth of the total annual energy potential available from Canadian forest biomass. End uses other than for fuel, electricity, and steam generation are at present unknown.

The use of wood for power generation on a small scale is now a fact in several of the New England States, and Brazil is a heavy user of methanol as a transportation fuel. A major resource assessment of forest biomass to realize its renewable energy potential is now a high priority in Canada.

Keeping these concerns in mind, let us consider some of the options for wood heating equipment open to Canadian homeowners, in one of the few nations remaining where a favourable margin between wood demand and its supply still exists.

HEATERS GALORE — THE BEWILDERING CHOICE

There's a vast and confusing array of choices for the newcomer who wants to get on the wood-heating bandwagon. One should decide in advance what the basic heating and cooking needs are and how they will be satisfied. Is it space heating, cooking, or for aesthetic purposes that the equipment is primarily required? It is difficult to find a heater that can meet all three of these needs in one unit, although the Findlay Chatelaine is a three-way, cast-iron Canadian model that does just that. The Fisher, Riteway, Norway's Jotul and Denmark's Morso are two-way stoves that operate as air-tights or, with doors open, function as fireplaces.

Space Heating

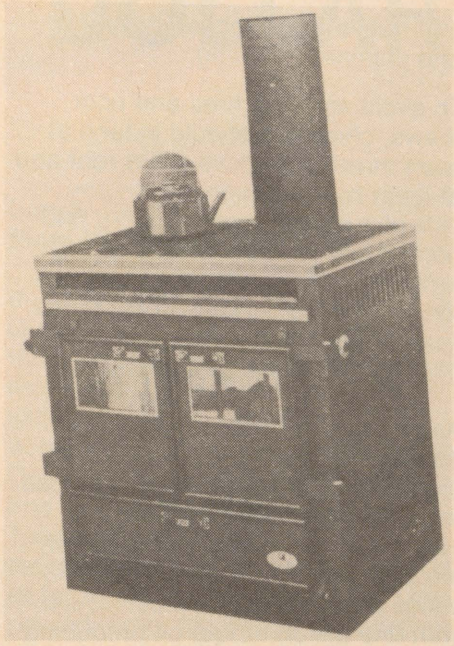
Stoves designed for space heating vary a great deal but they can reach 60 per cent efficiency, which is nearly as good as a well-adjusted oil furnace which is rated at 65 per cent. Box or parlour stoves, barrels, furnaces, and the efficient circulating heaters (stoves with exterior cabinets that allow air circulation by convection) are standard in this category. Radiant and convection heat are produced by these units and ideally this type of stove should be located in the centre of the space it is to heat. Stoves for space heating are not generally used with open doors although some box stoves (i.e., the larger Fishers) and Franklin types are now made with mica or tempered glass doors that permit a view of the flames.

Airtight construction is one of the most important design changes in recent wood stoves. This feature makes it possible to control air intake and the rate of combustion, so that the stove heats all night (10-12 hours) on one charge of wood and still has a live bed of coals in the morning. Solid, tight joints with insulated doors and thermostatic draft controls are other features to look for in long-burning wood stoves. Another heat-conserving development in the newer stoves is the use of baffles inside the combustion chamber to force the hot gases through a longer path to recover as much heat as possible before they enter the chimney. Baffles or a flue extending well into the firebox are especially economical when the stove is hooked directly into an outside chimney which removes the smoke and gases efficiently but provides no further heating. If the stovepipe is led through another room, preferably directly above the heater, before exiting the house, the hot pipes act as an effective room heater. Hot stovepipes can be a fire hazard unless installed at least 18 inches from an inflammable surface and pass through walls and floor via a heat-dissipating thimble. A floor grate permits the entry of radiant heat from a cellar stove or furnace to warm the second storey.

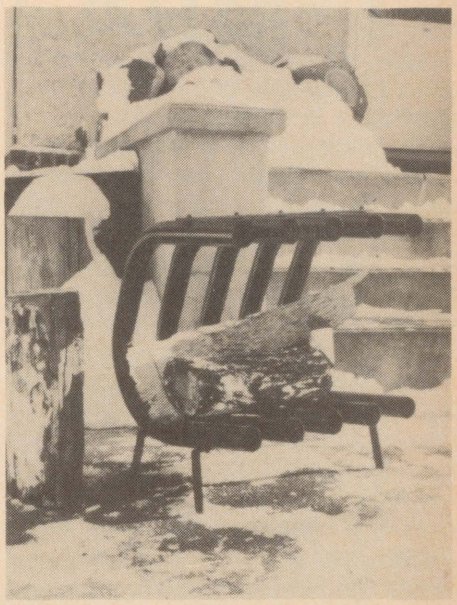
Wood furnaces are designed to operate as a central space heating unit and many add-on models or combination oil-wood units are now sold that combine the economy of wood with the convenience of oil depending on the whim of the owner. Add-on wood furnaces are generally less efficient than the complete wood furnace system, but they provide the flexibility of a back-up heating unit in an emergency. At the moment neither the Canadian Standards Association (C.S.A.) nor the Underwriters Laboratories of Canada (U.L.C.) approve wood-gas units, although this equipment is now common in the United States.

Cook Stoves

Fifteen years ago, I purchased a wood cook stove for about $10. Then you could hardly give them away; now eager buyers have to be put on a waiting list for some of the better models, such as the Enterprise Foundry line from Sackville, New Brunswick. A wood cooking stove is an excellent radiant heater, but it is designed for cooking rather than heating so does not keep a fire overnight. Fuel wood for a cook stove can be made from the tops of trees and branches and is split much finer than wood used in a fireplace or furnace. This smaller-sized wood gives the quick heat necessary for best cooking performance. (It is true that food tastes better when cooked over dry wood heat. Soups and meats all develop special flavours from the slower cooking temperatures, and baked bread in a wood-fired oven is a real treat.) Cooking with wood takes some getting used to and anticipated cooking needs must be thought out in advance. The "city-hurry" syndrome has little place in a cuisine geared to a wood-fueled cook stove.



The Findlay is a three-way cast iron Canadian model.



A new device is this heat-conserving grate for the fireplace.

The Fisher is another three-way model, providing for cooking needs, heat, and the aesthetic qualities of a fireplace.

Fireplaces and Franklins

Fireplaces, either free-standing or prefabricated, whether for aesthetics or for heating use are the least efficient wood heaters around. Fireplace efficiencies range from 10 to 20 per cent. Heatalators installed at the time of fireplace construction can improve on this heat output considerably. New devices are now available that help to convert these heavy wood consumers into more efficient heaters. These include heat-conserving grates available from Sears and others that pick up cold air from the floor through a system of pipes that also supports the wood fire and by convection heat passes this warmed air back into the room. These can increase by up to 20 per cent the radiant heat produced from the fireplace alone. The current Wood Stove Directory (1979) lists other fireplace improvements that include tempered glass doors which incorporate the above heat conserving-grate principle. The glass doors prevent a substantial heat loss when the fire dies out — one of the major inefficiencies of a fireplace as warm, inside air gets continuously sucked up the flue. Hearth Mate is a fireplace stove that will convert most fireplaces into a heater using an adjustable metal cover panel that blocks the fireplace opening, and is attached to the back of a wood stove. This is a practical solution for the heating deficiencies of many fireplaces, but the beauty as well as the psychological warmth of an open fire is traded for an unromantic, but more efficient, black box.

The Franklin stove is another good alternative for many who want the open-hearth look but need better heating than a fireplace offers. The stove, named after its original inventor, Benjamin Franklin, is very popular for cottage use. It is an efficient radiant heater with excellent fireplace features but unsatisfactory for serious cooking.

Other concerns for the newcomer to wood heaters are materials, fire safety, and choice of firewood. Cast iron and steel plate are the standard materials used in all wood stoves.

Both have their strengths and weaknesses, depending on how they are used. Lightweight one eighth inch steel plate is satisfactory for a quick-heating stove of the drum or Ashley type. Sheet steel is almost unbreakable, but it can warp at high temperatures. The short life of a thin-walled stove can be lengthened by adding a fire brick lining or a bed of sand to save the body excessive heat and from burning or rusting out too quickly. Cast iron holds its shape but is brittle and can crack. Joints may require periodic caulking to keep them airtight, unlike the welded joints of steel plate. The heavier the material, the better the radiant heat produced and the longer the life of the stove.

If the stove is to be used for continuous heating, then ease of operation is important. Stoves, such as the Fisher, Riteway, and Jotul are the best. They are airtight, reasonably massive, will take a large charge of wood and have a thermostatic damper control that permits a slow, even burn. Airtight is important for steady heat output at low rates of fuel consumption.

In its June issue, Building Supply Dealer (B.S.D. 1979) warn that burning wood produces higher temperatures than oil and gas — so wood burning units should not be connected to a chimney that is not capable of handling the higher heat levels. Spark guards and fire screens are essential for open fires and incomplete combustion causes creosote build up. This is a highly combustible, tar-like deposit from condensed wood gases and the main cause of chimney fires. These deposits can be minimized by using dry wood and avoiding slow burning fires with tightly controlled drafts as they tend to increase creosote deposition. Raising flue temperatures reduces creosote build up. The occasional chimney fire is a cheap way of getting rid of creosote deposits, if you have a well-insulated, fire-clay lined flue with all inflammable materials removed at least three inches from the chimney. Several chemical compounds are now on the market that reduce or prevent creosote formation when periodically burnt in the fire. The alternative is an annual stovepipe and chimney cleaning.

To avoid smoking fires and poor draws, chimneys should extend at least three feet above a flat roof and at least two feet higher than any part of a sloped roof within 10 feet horizontally of the chimney. B.S.D. further recommends that stove customers should purchase only those heating units that have been certified by the C.S.A. or the U.L.C.

As to wood heating values, the heavier and denser the wood the higher its BTU value. Air dried wood (about 20 per cent moisture) will yield 5800 BTUs per pound. Green wood (about 60 per cent moisture) yields about 4100 BTUs per pound with one gallon of fuel oil producing 167,000 BTUs. Coons (1976) gives Hale's (1933) gross heating values for rock elm, shagbark hickory, and white oak at the top with 32,000,000 to 30,600,000 BTU per standard, air-dry cord. Sugar maple is the next best at 29,000,000 BTUs and is probably the favoured firewood because of its relative abundance and excellent coal-forming ability. Tamarack at 24,000,000 is the hottest conifer with balsam fir the lowest at 15,500,000 BTUs. All the conifers tend to be very sparky fuels because of the presence of inflammable resins, gums, and tannins in their bark and sapwood. With these woods, in particular, a tight fire screen is essential. The heavier, denser hardwoods have the best heat value and coal formation, and the larger the piece the longer the fire. Burning green wood is hard on stoves, produces less heat, and much more smoke and creosote. It takes three to six months to air dry firewood; only then is it a clean and safe fuel if used properly.

Wood stoves and wood heating are not for everyone because they take more care and attention than the carefree, pushbutton, central heating systems many of us are used to. Wood is there, if you want it, and more and more will be the only thing we can afford as OPEC and its like push oil prices beyond the limits of most of our pocketbooks. In the Canadian climate the use of wood for heating, as in the good old days, appears to be one of the best roads to renewable energy self-sufficiency. Do we have a choice?

References Cited

Building Supply Dealer 1979. Heating with Wood Fuels. June issue. MacLean-Hunter, Toronto.

Census of Canada 1978. Canada Census Information, Ottawa.

Coons, C. F. 1976. Supplement your heat with wood. Your Forests, Vol. 9(3) Ontario Ministry of Natural Resources, Toronto.

Eckholm, Eric 1975. The Other Energy Crisis: Firewood. Worldwatch Paper no. 1, Worldwatch Institute, Washington, D.C.

Jones, A. R. C. 1979. Woodland Resources Manual (see in particular sections on Woodlot Management; Farm Your Woodlot). 3rd Revised Printing, Renewable Resources, Macdonald College, Quebec.

Lassoie, J. P. 1978. Conservation News and Views Vol. 1(5). New York Cooperative Extension, Ithaca, N.Y.

Love, P. and **R. Overend 1978.** Tree Power — An Assessment of the Energy Potential of Forest Biomass in Canada. Report ER 78-1. Renewable Energy, Energy, Mines and Resources Branch, Ottawa.

Wood Stove Directory 1979. Annual issue: The National Sourcebook of Wood Heat Equipment, Energy Communications Press, 106 Market St., Manchester, N.H.

Some Recommended Reading

Blair and Ketchum's Country Journal, P.O. Box 8600, Greenwich, Connecticut. (Special issues on: Which Wood; Felling a Tree; How to Choose a Chain Saw; Heating with Wood) (Monthly).

Gay, Larry 1977, Heating with Wood. Garden Way Publishing, Charlotte, Vermont.

Hamilton, L. S. and **F.E. Winch 1956.** Making and Using Wood Fuel. Cornell Extension Bulletin No. 940. Ithaca, N.Y.

Harrowsmith, Camden House Publishing, Camden East, Ontario (Special issues: No. 14 and No. 15 on Wood Fuel and Heating). (Bimonthly).

Pratt, Martha, editor, 1978. Heating with Wood. The Institute of Man and Resources. Publication 1/78. Charlottetown, P.E.I. p. 12.

Schneider, M. H. 1979. Wood Fuel: A space heating horoscope. UNB Forestry Focus, Continuing Education in Forestry. Vol. 4 (2). Box 4400, Fredericton, N.B.

Shelton, J. and **A. B. Shapiro 1977.** The Woodburner's Encyclopedia. Vermont Crossroads Press, Waitsfield, Vt.

Tillman, D. A. 1978. Wood as an Energy Resource. Academic Press, New York. p. 252.

Vivian, John 1976. Wood Heat. Rodale Press, Emmaus, Pa.

MILLION DOLLAR FARMS!

by George D. Weaver and Sharon Wickhueller*

For the last 40 years farms in Canada have been growing in size, and it has required fewer and fewer individuals to feed our population. This trend towards fewer, larger farms has been seen as a natural, beneficial process. Advances in mechanization, communication and transportation, plant and animal breeding, nutrition, pest control and many other areas have resulted in large increases in farm productivity. The occupation of farming has become less tedious, less physically exhausting, and safer, and farm life has improved with better roads, rural electrification, and better social services such as schools and hospitals.

Farming is generally viewed as private entrepreneurship at its best — the last stronghold of small, independent decision-making units run by a farmer and his family. What most of us do not realize, however, is that farming today is one of the most capital intensive businesses in our economy. The amount of money invested per worker in farming is more than five times the average for all Canadian industry — and the difference is widening.

The question is now being asked, rather urgently, as to how long this consolidation process can go on, and what does it mean for people wishing to enter the business or, indeed, to those already in the business? This article explores some of the recent changes in the nature of farming, particularly from the standpoint of capital investment, and discusses some of the implications of these changes for persons considering farming as an occupation, and for those farmers presently faced with the "GROW — OR GO" dilemma.

*George D. Weaver, Lecturer, Agricultural Economics, Sharon Wickhueller, second year student in Plant Science.

Larger Farms in More Ways than One

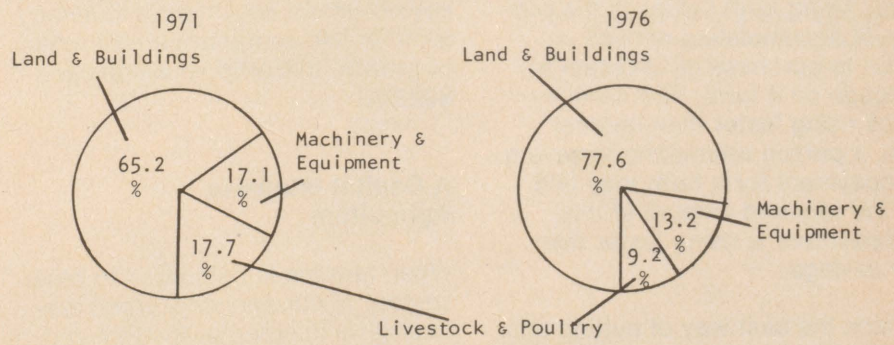
In 1976 the average census farm[1] in Quebec was 210 acres (85 hectares) in size, with a capital investment of $91,148. This compares with an average farm size of 270 acres in the Maritimes, 192 acres in Ontario, 852 acres in the Prairies, and 446 acres in British Columbia. These figures are not totally representative of the productive size of farms since they include both improved (crop, fallow and pasture) and unimproved (woodland and other) land. Apart from the Prairie provinces average farm sizes on an improved acre basis are relatively similar across the country: 128 acres in the Maritimes, 129 acres in Quebec, 139 acres in Ontario, and 140 acres in B.C.

The real growth in farm size has not been in the land area of farms, but in the capital investment required for purchasing land and buildings, machinery and equipment, and livestock and poultry. For example, although the growth in the physical size of farms in Quebec has been moderate since 1961, increasing from 165 acres (1961) to 210 acres (1976), or about 27 per cent, during the same period the average worth of these farms has more than doubled. In terms of 1977 dollars, the average capital investment per farm in Quebec in 1961 was $44,687, compared with $96,602 in 1977.

Most of this increase in farm worth has come from higher land and machinery values. Figure 1 illustrates the relative amounts of investment in each category for 1961 and 1977 for all eastern Canada. Investment in livestock and poultry is relatively higher in Quebec than the rest of the country, which reflects the importance of livestock production to Quebec agriculture.

Average capital investment per farm has been rising faster than the general inflation rate and is accelerating. Table 1 outlines annual rates of increase for average capital investment per farm for Quebec and Canada, as well as the consumer price index. It can be seen that the average rate of increase in farm value is over twice that of the infla-

Figure 1: Relative Proportions of Fixed Farm Investments - Eastern Canada



Source: Selected Agricultural Statistics for Canada. 1970. Agriculture Canada. Pub. No. 78/10. Ottawa.

[1]In the 1976 census, a farm was defined as a farm, ranch, or other agricultural holding of one acre or more with sales of agricultural products during the year 1975 of $1,200 or more.

Table 1. Annual Growth Rates in Average Capital.

5 Year Period	Investment per Farm Average Annual Rate (%) of Increase Canada	Quebec	Consumer Price Index
1961 - 1966	9.5	6.1	2.2
1966 - 1971	7.4	8.0	3.7
1967 - 1972	6.7	9.5	3.9
1968 - 1973	8.2	11.2	4.6
1969 - 1974	11.4	12.9	5.8
1970 - 1975	14.5	13.8	7.3
1971 - 1976	19.6	17.3	8.3
1972 - 1977	17.9	19.1	8.9

Source: Selected Agricultural Statistics for Canada. *Op. Cit.*

Table 2. Fixed Capital Investment per Worker for Selected Canadian Industrial Sectors

Industry	1971	1976
	Fixed Capital Assets per Person Employed[1] (dollars)	
Forestry	3315	6540
Mining	82535	119365
Manufacturing	12050	17880
Construction	4085	6825
All Utilities	48960	72590
All Industries	12945	20805
Farming	43809	115590

[1]Except for farming these values have been calculated by dividing the net fixed capital assets of all corporations in each industry by the number of persons employed in that industry. Sources: Corporation Financial Statistics, Statistics Canada, No. 61-207 and Estimates of Employees by Province and Industry, Statistics Canada, No. 72-008.

[1]W. D. Jones, *Farm Labour,* in Market Commentary: Farm Inputs, December 1978, Agriculture Canada, Ottawa.

tion rate for all of Canada. Currently the rate of growth is almost 20 per cent per year.

What does this mean for farmers and persons wishing to enter farming? Obviously, for a person owning a farm this situation is relatively favourable: the capital gains on investment are beating inflation and are probably greater than those obtainable from most other investments. But for agriculture as a whole, and for those who want to purchase farms, this situation may not be desirable for several reasons.

A very major difficulty with such rapidly rising farm values is the problem of accumulating enough capital to purchase or to obtain a mortgage on a farm. With farm values rising faster than interest rates, a person attempting to save a downpayment for a farm may find that the required amount of this downpayment is rising faster than their savings.

Perhaps the best way of putting this into perspective is to extend the trends of the past number of years into the future. This is not to say that what happened in the past will happen in the future, but perhaps will best illustrate why what has happened in the past may not be able to continue much longer!

In 1976, the average capital value per farm for all of Canada was $182,557, with capital values having increased an average of 19.6 per cent per year since 1971. At this rate of growth, the average investment per farm in 1986 would be $1,091,752! In Quebec, at the annual growth rate from 1971 to 1976, perhaps we can take some solace in the fact that we won't have farms worth a million dollars until 1992.

Still, a person wishing to purchase a farm today would need about $15,000 to make a 10 per cent downpayment on a typical Quebec farm. In five years, at current rates of growth, this amount will exceed $32,000.

A Capital Intensive Agriculture

When farming is compared to other sectors of our economy some surprising facts emerge. In 1977 annual farm employment in Quebec was about 74,000[1]. Total capital investment in farms for the province was $3,928 million, or about $53,081 per farm worker. For all farms in Canada the average investment per farm worker was about $115,590. How does this compare with other industries?

When measured against other sectors farming is the second most capital intensive industry in our economy, following mining. It surpasses the amount of fixed capital required per man in such industries as transportation and communication and all manufacturing, and is more than five times greater than the average for all Canadian industry (Table 2). What is most disconcerting is that the annual increase in capital per worker in farming is growing at more than twice the rate of all other industries, with the likelihood that farming will soon be, if it is not already, the most capital intensive business in our economy.

Where Do We Go From Here?

These trends are very quickly bringing us to a crossroads in terms of forcing us to decide what kind of agriculture we want. Who will own our farms? How large will farms be? What kind of rural structure do we feel is economically and socially desirable? How shall we bring what is seen to be desirable about?

These questions are complicated by the fact that our current farm structure is composed of persons in the business for different reasons, and with different opportunities. To a large extent most current farm policies do not recognize and incorporate these facts into them; instead, all farms and farmers are grouped together and forced to compete and participate on the same terms.

Dr. G. L. Brinkman, of the University of Guelph, distinguishes farm types based on farm resources and sales: hobby farmers, limited resource farmers, and serious commercial farmers. Many limited resource farmers are committed to the occupation but do not have the resources — land, livestock, management, or capital — necessary to earn adequate incomes from their farms. These

[1]W. D. Jones. **Farm Labour,** in Market Commentary: Farm Inputs. December 1978. Agriculture Canada. Ottawa.

farms have annual sales in the range of $5,000 to $25,000, and off-farm income is usually greater than incomes derived from farm operations. Serious commercial farmers, those with sales in excess of $25,000 per year, make up only about 30 per cent of all farmers in Canada but account for 70 per cent of total production.

As farm capital values increase, it becomes more difficult for smaller farms to compete with larger farms or to acquire the resources necessary to become economically viable. Larger farms, when being "rolled-over" (changing ownership), become available only to those already with substantial resources: family, other large farmers, or private individuals or corporations able to invest significant amounts of capital.

Typical of this roll-over problem is the situation concerning quotas for milk and poultry producers. Quota values have generally been increasing, and at present can amount to a very large portion of the amount of capital required to enter the business. Since quotas are not physical assets, institutions such as the Farm Credit Corporation will not extend credit to farmers to purchase quota without some other asset as security. Hence, as quota values increase often only other well-established quota holders can afford to purchase available quota. As these units consolidate, their overall value increases and it becomes very difficult for beginning farmers to acquire them. Some fear that with larger farm units we may be creating a landed gentry.

Believing that bigger is better, the current impetus in agricultural policy is directed toward hastening the exit of smaller farmers who cannot, or choose not to, maximize production. Hence the two main forces spurring the consolidation and growth of farm units are economic factors favouring large capital units, and institutional factors, such as farm policy and public attitudes, which are hastening this process.

But is bigger necessarily better? In light of recent work evaluating farm sizes in relationship to resource use and efficiency, the answer appears to be: "Only up to a certain point", and this point is generally a well managed one-man farm! The reason for this conclusion is that most of the economies that are associated with size are captured before farms become very large (Figure 2). Costs of production per unit decline very rapidly to a point, after which they stabilize or decline very slowly: the chief incentive for enlargement is then not to reduce costs of production, but to achieve a larger business, more output, and more total income.

It is now starting to be recognized that perhaps the best overall farm structure is one that allows a diversity of farm types and sizes. In some commodities efficiencies can be gained by size, while in others larger units do not use resources as efficiently as smaller ones. Some part-time units can be very resource efficient and can permit the efficient use of resources which may in themselves not provide the basis for a full-time operation. Finally, some of the efficiencies often associated with size may not necessarily be due to simply the size-factor: big is not necessarily better because of bigness.

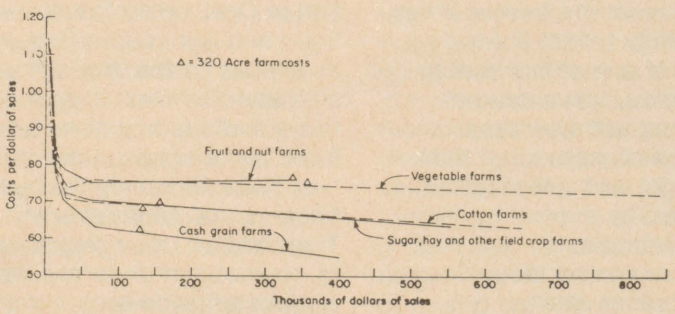
A recent survey of farms in England found for example, that if consolidation occurs from purchases of fragmented blocks of land, considerable diseconomies of scale may result due to increased travel costs. And research from California indicates that management, resource quality, and the overall institutional structure are more important than size in lowering production costs. Failure of farms more often than not was caused by inefficiency for the scale of farm in question, rather than the size of the farm. Further, farmers were often not able to achieve their goals due to pricing inefficiencies (an institutional factor), rather than technical inefficiencies related to size.

In light of these developments, it would appear that greater attention should be directed in a multifaceted approach at assisting all farmers to achieve the kind of operation which most effectively uses the given resources of their farm, without undue preoccupation with "bigger" or degree of commitment to full-time farming. This kind of approach, recognizing that farmers are a diverse group, with different goals and capabilities, makes sense not only from a social standpoint but, as indicated above, also from an economic standpoint. If farming is to continue to be accessible to those with moderate financial resources and to continue to play a major role in rural Canada, farm policies and programs will have to be designed with these realities in mind.

Selected References

1. **Bailey, W. R. 1973.** The One-Man Farm. Economic Research Service. United States Department of Agriculture. ERS-519. 12 pp.
2. **Edwards, C. T. W. 1978.** The effects of changing farm size upon levels of farm fragmentation: A Somerset case-study. Journal of Agricultural Economics. 29(2): 143-153.
3. **Hall, B. F.** and **E. P. DeVeen 1978.** Farm size and economic efficiency: The case of California. American Journal of Agricultural Economics. 60(4): 589-600.
4. **Fisk, J. 1979.** Years Outlook Again Cash-bright for Canada's Farmers. The Globe and Mail. Toronto. May 26. B-1.
5. **Trent, M. J.** and **G. L. Brinkman 1979.** A classification of limited resource farmers, Canadian Farm Economics. 14(1-2): 21-29.

Figure 2: Average Cost for California Farms Varying Sizes.



Source: Hall, B.F. & E.P. LeVeen. 1978. Farm size and economic efficiency: The case of California. American Journal of Agricultural Economics. 60(4): 589-600.

Macdonald Reports

CONVOCATION, JUNE 2, 1979

CONVOCATION ADDRESS

by Gaétan Lussier,
Deputy Minister,
Agriculture Canada

To most of you here today I am simply one among a moving mass of bodies, a shifting sea of faces, some of whom are being recognized for various degrees of achievement and accomplishment by this great University. To many of you I am, in fact, a stranger in a strange land being honoured among the many here today at this Convocation.

Yet I am no stranger here. The mixed feelings of pride and humility that I am certain exist among those graduating and receiving recognition for their work today is a common denominator, a common bond, between us. This is for me not simply a physical "coming home" — I have, after all, the good fortune to be an alumnus of Macdonald College — it is more than that, it is an ideological return, a return to the very roots of my beliefs that, put very simplistically, are based on the conviction that the future of humanity lies in the hands of the tillers of soil and reapers of grain.

It was here at Macdonald College that this conviction reached maturity and it has been this conviction that has kept me growing.

To say that I am aware of the great honour that is being paid me today is only to skim the surface of my feelings. Words, at the best of times, can only partially reflect the scope and nuances of any person's reactions. I recognize, however, that with this honour comes increasing responsibility and, here too, I think this is a thought and a feeling that must be shared by everyone today whose graduation has, in many ways, put them among the privileged in our human family.

I remember that when I graduated from this College, our College, I waited with some trepidation for the Convocation address, wondering what burdens of philosophy and time the speaker would put upon the shoulders of the new graduates. What reflections of personal ideology and ambition. Today I stand before you and I say to each of you in the words of an old writer *"de te fabula"...* — the story is about you. For it is in you that the seeds have been planted to be carried out and spread to the betterment of your neighbour and fellow man.

Today we live in a world menaced by potentials of disaster. The developed and developing nations struggle against each other, and with each other, to fill their needs. Energy and food, the ability to feed our populations and maintain our industries, the need for national wealth and strong defense systems, the need to become and remain "number one" — these are just a few of the national ambitions which menace the future of the human race. Of those ambitions, the ability to remain alive, to survive, is probably the one that is shared by every human being as well as by every nation. It is the one single desire that unites mankind, and, basically, the key to survival lies in the hands of the man or the nation that can look to the future secure in the knowledge that hunger will remain a stranger.

It is a fact that five years ago concern was voiced at such levels as the World Health Organization, the Organization of Economic Cooperation in Developing Countries, the Food and Agriculture Organization, as well as by the World Food Council that 400 million people among this world's family of man suffered from forms of advanced malnutrition. Today it seems that we have become accustomed to this reality. That most of us accept, with regret of course, that there are those to whom starvation is a way of life, to whom disease and the terrible personal decimation which is bred by inadequate nutrition remains a part of the so-called gift of life. It is a fact that as the world passes through a four-day cycle, a third of the million people who will come into the world in those four days will live within the shadow of death through such nutritional inadequacies. It is also a fact that the 400 million total of five years ago has risen to a substantial 450 million without eliciting too much of a response.

It was Nehru who said that he wanted nothing to do with any religion that was concerned with keeping the masses satisfied to live in hunger, filth, and ignorance. I believe that it is the onus of we who are privileged, cocooned as many of us have been within a country where we have abundance, to use our advantage to the benefit of our human family, and here I am not speaking merely of food distribution, but also distribution of what you are harvesting today — knowledge.

We are all aware that agriculture is a tool that, in the beginning, brought civilization and, in these days, holds the key to mankind's survival. It was said, by Daniel Webster back in the 19th century that where tillage begins other arts follow. "The farmers, therefore," said Mr. Webster, "are the founders of human civilization."

If Daniel Webster were alive today, I think he would assert that it was not simply the ability to farm the land but the knowledge to make the desert bloom that would decide the fate of civilization. It is no surprise that it is not simply a matter of production but a matter of technical expertise in the agricultural field that is of increasing importance among today's nations, for it is that knowledge that will ensure the perpetuation of humanity.

Over the last decade we have witnessed some dramatic increases in food production and agricultural productivity, which have resulted for a number of reasons. Intensive agricultural research effort, for

one, which has provided us with better strains and hardier varieties, pesticides and herbicides to control the physical threats to our crops, chemicals to improve the yield, machinery to more efficiently manage our farms. Then, again, today's farmer has tuned himself to use the advances, and there, too, it is a matter of survival, since returns depend on production efficiency and a farmer's returns will dictate his survival. It is, after all, a matter of survival of the fittest. Then again, we see the increasing efficiency of our agri-businesses and the involvement of such institutions as this one where academics bridge the gap between research, government, and the producer in quest of ways to improve the constantly changing agri-food chain.

There is no question that all these differing initiators are having some effect, and I like to think that it is not simply accidental that there has been a steady increase in agricultural productivity since I left Macdonald College to make my mark in agriculture. It can hardly be mere chance that, in the 15 years since I left here, there has been a similar 15 per cent productivity growth in Canadian agriculture. I would say to the graduates of today that the signs are that the potential is, if anything, greater than ever before.

Yet, although progress is being made, it is not being made fast enough to meet and beat the enemy. In many developing nations, food production has to be the first and greatest objective. It is still among the smallest and poorest developing nations where, in the interim, we find it difficult to provide stop-gap help in the form of direct food aid for either dietary reasons or because of the lack of sophistication of handling, distribution, or storage of food, and the transfer of technology to help them feed themselves is most difficult. Among those nations there is, frequently, a political barrier — one that puts that small community in a state of chaos and where swords are of more use than ploughshares.

Here, in Canada, we have the technology, the land, the back-up resources to make us one of an elite group, a handful of countries that have the capability of producing more food than the country's population can consume. This is an advantage and with that advantage comes a heavy responsibility — that is to best use our advantage to the betterment of those others who share this planet with us.

At all costs we must avoid the temptation to concentrate our efforts on ourselves alone. This would be shrinking, not expanding, our resources. Instead, we must consider what ways we can best use our strengths and to do that we must evaluate ourselves within the global context and then be prepared to defend our agricultural objectives against the objections and criticisms of not just our national neighbours but ourselves.

Consider, for a moment, the soil that forms the balance of our agricultural credit account. In Ontario, Class 1 agricultural land is disappearing at the rate of 26 acres an hour. Some people put that figure as high as 33 acres an hour. Within our own domestic context this may seem acceptable. After all, we have so much land and we have a population that has grown in the last five years from 22 to nearly 24 million. We need the extra space, we need the extra houses, the shopping centres, and the freeways. All I would say, at this point, is to remember that our 24 million have a very low rate of malnutrition when compared to the 450 million in the world whose lives are one constant search for the next meal.

How can we help those less fortunate than ourselves? Is it morally right to deal with our resources on a "charity begins at home" basis? And this is where, of course, the realms of private commitment, personal belief, and practical dedication amalgamate.

The onus must start with the individual, with people who, like many of you here today, have the knowledge, the dedication, and the belief. That, in part, can be made to work, can be strengthened and reinforced by the power-corporates, the various levels of government and international organizations. The role of the knowledge-givers, someone once called them the "mind moulders", the universities, is to provide not just the knowledge but also the sense of direction to those who come to learn. Coupled with personal worth and ability, it is research that can provide the clues and sometimes the answers to achieving social development as well as economic progress.

At Agriculture Canada I like to think that we encourage that sort of commitment on a personal as well as on an institutional level. As our focus base widens and we find that to operate efficiently within the domestic arena we must relate more and more closely at the international level, we are putting more emphasis on dealing with our domestic agricultural issues within a global context. Ultimately, we must move to work with our fellow agricultural producers; those nations who, with us, can provide the basic food store of the world while, at the same time, working in unison to develop the food growing capabilities of their less prosperous neighbours.

Our emphasis on working with the universities, in asking for their help in reinforcing our research objectives, is, I believe, well-known and, in many cases, envied by other nations. That is why I am convinced that Canada's agricultural and scientific community must become even stronger in its determination to help solve some of the food production problems that the world faces. If the team approach, which we have adopted and which has proved to work so well within this country, can continue to increase its effects upon world food production problems, our example may well be one that is followed by others who share our agricultural strength, and then the whole world stands to benefit.

I am not now simply talking of research alone. That research must be proven in the field and show results, solid results at the farm gate level where our farmers will be producing more than ever before, while using less and less in the way of non-renewable resources. What is more, faced with the probability of increasing input costs and spiralling land values, the truth of "less is more" will have to be tested and proved again and again so that society, while facing the inevitability of paying realistic food prices will have the assurance that food is

being produced in the most economical way possible.

To make this possible, to tighten the links of the agri-food chain and keep it working smoothly, every segment of society, from government through academia to industry, will have to support and remain responsive to the needs of the system. Possibly, most important of all, the consciousness of the average consumer in our more affluent society will have to be raised so that an attitude of responsibility and responsiveness is cultivated towards food and nutrition. It is difficult for some countries to believe the sincerity of our announced position to help alleviate world hunger when thousands of tonnes of uneaten food is thrown out as garbage every year, and where about a quarter of the food that finds its way to the restaurant table ends up as waste.

In other words, the "haves" must be taught to share so that the "have nots" have more and to do that we have to proselytize a little and that is what I am doing now.

We are the "haves", you and I. We have clothes on our backs and the promise of an extra good meal tonight, most probably with no immediate concerns as to the shelter we must find or the food we must seek tomorrow, and with the assurance that our families and friends have those assets also. If we are to spread a little of the benefits which we have received — whether by chance or through a grand design, who can say — then we have to address ourselves to the problem that is with us and, unless we do something about it, will not go away.

The problem of empty hands and mouths. The single grim horseman of the Apocalypse which stalks the hungry and brings pestilence in the wake of starvation.

Our hands are full, and still we have more than is ours and yet we cannot hold. We, here, face the challenge of over-abundance and let me tell you that I see this as a challenge, not a problem. Dealt with selfishly we can simply count our blessings and grow fat on our own over-supply and sluggish on our self-satisfaction. Used responsibly we can share and alleviate some suffering and benefit in return.

That is the challenge of agriculture today. Not simply a home on the land, but a complex, multi-facetted challenge that can be approached from many differing directions. Research. Production. Food processing. Food distribution. Technology transfer. All adding up to bettering an agri-food system that will serve not just this country but our fellow nations.

There is room for the ambitious and hight spirited; there is room for those who will not allow themselves to be overcome by the magnitude of the task before them. We have, after all, the strengths of our own progress from which to draw. The development of rust-resistant wheat, the development of such hybrids as Triticale, the ability to provide the technology that contributed to India's much advertized food-surge so that country can now not simply feed more of her people but export food for the first time in history.

The progress is there and is working — whether in the control of pests and disease, whether in the utilization of alternate sources of renewable energy, whether in new ways of food processing or distribution, there is much to attest to positive growth. Yet still there is much to do.

At the moment there is a global concern focusing on such subjects as inflation and energy but soon these, too, will pass to be overtaken by the spectre of hunger which reinforces the ever-increasing need to strengthen our food production capabilities.

We have to start making the necessary adjustments now and work towards fostering a more global perspective. We have to shift our priorities so that we can better rise to the challenges that confront us. Such challenges, for example, as balancing the growing concerns of environmentalists over the use of pesticides and other agricultural chemicals against the obvious need to effectively control weeds, pests, and diseases that threaten the success of our crops and livestock. We must learn to use the advances we have made to reinforce our basic products being mindful, always, of any adverse effects — and here I am thinking particularly of the problems of food additives which, in many cases, are harmless when originally tested only to be found not quite so harmless as the sophistication of our tests improve.

We must always be on our guard not only to advance with care and responsibility, but also to use all the means at our disposal to be constantly evaluating and testing those very systems and methods which we have accepted in the past.

This September, the World Food Council will hold its sixth meeting in Ottawa, Canada. Once again the main concern facing the 36 countries meeting will be the balance of food production and supply in the world, and it is my hope that Canada will be taking an aggressive leadership role in collaborating with other nations to develop strategies for increasing world food security. However, whether on the level of international dialogue or individual personal commitment, it is clear that nothing can be accomplished half-heartedly and for success, and effective success at that, we must be prepared to play a leading role.

It is up to us, to you and me, to show that we have not just the knowledge and ambition but also the determination and commitment to face the challenge, and we must make that commitment now for history may not offer us a second chance. We have to demonstrate beyond the shadow of a doubt that we have the will to make a significant contribution in proportion to our resources and our economic and technical strength so that we that have so much, can prove that we are ready to share our gifts and combat our state of over-abundance.

Here, at Macdonald, there is a tradition and you, and I, are part of that tradition. We have been given, as it were, the best of all possible worlds and we share, in our alma mater, a source that has given us the ability to go out, as many of those before us have done, and use our talents to the betterment of others. I am certain that this is a tradition which will

Diploma in Agriculture students about to be presented by Professor N.C. Lawson, Director of the Diploma Course.

survive the years that lie ahead as it has the years that have passed. But that is up to you, and those who come after you.

This College itself has set the example of the integrated approach that I have stressed in my talk today. It has, through its people and its resources, made itself a part of Quebec agriculture and it has committed itself with honour. It is my hope that it will continue and grow in strength and, through its human resources, will rise in prominence to meet the challenges not simply of the community it serves so well directly, but also of the world of which we all are citizens.

For many of you, this is the beginning — a time for high hopes and high ambitions. Some of you may be familiar with Thoreau's comment that "the youth gets together his materials to build a bridge to the moon or, perchance, a palace or temple on the earth, and, at length, the middle-aged man concludes to build a woodshed with them." I would ask you to lay your plans well and be prepared to defend your dreams and fight for not just your own destiny but the destiny of your fellows. I wish you all Godspeed.

FACULTY OF AGRICULTURE

DIPLOMA IN AGRICULTURE

Candidates presented by Professor N. C. Lawson, Director of the Diploma Course

Boersen, Peter, Melbourne, P.Q., Honours;
*Buono, Mikele, St-Polycarpe, P.Q.;
Carter, Christina, Pointe Claire, P.Q.;
Checkley, Francis, Sherbrooke, P.Q., Honours;
Elliot, Greg, Howick, P.Q., Honours;
Fletcher, Steven, Kanata, Ont., Honours;
Haney, Greg, Beaconsfield, P.Q., Honours; Ralston Purina Project Prize;
Jerret, Michael, Montreal, P.Q., Honours;
Johnson, Laura, Melbourne, P.Q.;
Leonard, John, Renforth, Kings Co., N.B.;
Ouimet, Gaétan, Vankleek Hill, Ont.;
Patton, Allan, Plow Lane, Conn., First Class Honours; Ministry of Agriculture for Quebec Silver Medal;
Schach, Michael, St. Sauveur des Monts, P.Q., First Class Honours; Ministry of Agriculture for Quebec Gold Medal;
Scholz, Monique, Pierrefonds, P.Q., First Class Honours;
Singh, Ramchand, Montreal, P.Q.;
Springer, Paul, Montreal, P.Q., First Class Honours;
Templeton, Scott, Howick, P.Q.;
Wattie, David, St-Laurent, P.Q.;
Wood, Derek, Pointe Claire, P.Q., First Class Honours.

* - In absentia

SCHOOL OF FOOD SCIENCE

Candidates presented by Professor H. R. Neilson, Coordinator of the School of Food Science

Dietetic students who have completed the non-professional phase of their program, but still have to complete the internship phase leading to the B.Sc. (F.Sc.) degree.

Arrey, Kim, Montreal, P.Q.;
Bastasi, Gilda, Dollard des Ormeaux, P.Q.;
Eckert, Eleanor, St-Laurent, P.Q.;
Greene, Linda, Hampstead, P.Q.;
Grohmuller, Yvonne, Outremont, P.Q.;
Harvey, Brenda, Aylmer, P.Q.;
Houle, Danielle, Montreal, P.Q.;
Kastuk, Susan, Verdun, P.Q.;
Kolomeir, Bonnie, Westmount, P.Q.;
Laberge, Anne, Pierrefonds, P.Q.;
Lachapelle, Louise, Montreal Nord, P.Q.;
Lederman, Marian, Laval, P.Q.;
Martin, Anne, Pointe Claire, P.Q.;
Phillips, Hazel, Montreal, P.Q.;
Shaffer, Rhonda, St-Laurent, P.Q.;
Simard, Francine, Ste. Anne de Bellevue, P.Q.;
Yung, Julia, Hong Kong.

DEGREE OF BACHELOR OF SCIENCE IN FOOD SCIENCE

Alexander, Julie, Osoyoos, B.C., (Nutrition), First Class Honours;
Harrison Prize; University Scholar;
Chabot, Normand, Montreal, P.Q., (Food Chemistry), Honours;
Globus, Sheila, Beaconsfield, P.Q., (Nutrition);
Grant, Elizabeth, Kingston, Jamaica, W.I., (Nutrition), Honours;
Jezek, Eugene, LaSalle, P.Q., (Food Science);
*Li, Shing L.D., Kowloon, Hong Kong, (Food Science);
Thoman, Linda, Montreal, P.Q., (Nutrition), First Class Honours;
*Wong, Stephanie, Kowloon, Hong Kong, (Food Science);
Yarmolinski, Lorraine, Montreal, P.Q., (Food Chemistry), First Class Honours; Governor General's Medal; University Scholar;
*Zaphiratos, Domna, Montreal, P.Q., (Dietetics), Honours.

* - *In absentia*

DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE

Agricultural Sciences Division

Candidates presented by Professor S. P. Touchburn, Coordinator

*Armour, Ian, Hemmingford, P.Q., (Plant Science), Honours; Cutler Shield;
Beauchamp, Michel, Dollard des Ormeaux, P.Q., (Animal Science);
Begg, Caroline, Lachine, P.Q., (Soil Science), Honours;
Bertrand, François, Montreal, P.Q., (Plant Science);
*Bérubé, J. A. Yves, Dalhousie, N.B., (Animal Science);
Blanchard, Darlene, Oromocto, N.B., (Agricultural Economics), Honours;
*Calder, Joe R., Springhill, N.S., (Plant Science), Honours;
Chevrier, Gérald, Dollard des Ormeaux, P.Q., (General Agriculture), Honours; University Scholar;
*Clark, K. Thane, Wilmot Valley, P.E.I., (General Agriculture);
Cochrane, Mary Lynn, Kensington, P.E.I., (Animal Science);
Cook, Erica J., Chambly, P.Q., (Plant Science), Honours; University Scholar;
Cousineau, Christian, Terrebonne, P.Q., (Plant Science);
Cousineau, Jean, Laval, P.Q., (General Agriculture), Honours;
Demers, Marie, St. Zotique, P.Q., (Plant Science);
Deslandes, Christine, Ste. Foy, P.Q., (Plant Science);
Dubuc, Marie, Ville Saint-Laurent, P.Q., (General Agriculture), Honours; University Scholar;

Dussault, Normand, Duvernay, Laval, P.Q., (Animal Science), Honours;
Elliot, John, Anagance, N.B., (General Agriculture), First Class Honours; University Scholar;
Gagnon, Mario, Joliette, P.Q., (General Agriculture), Honours;
Gill, Ross, Huntingdon, P.Q., (Animal Science), Honours;
*Gilmore, Cheryl, Rothesay, N.B., (General Agriculture);
Gordon, Cedric, Montreal, P.Q., (Animal Science), Honours;
Gourley, Marie, Outremont, P.Q., (Plant Science), Honours;
Gratton, Marcel, St. Benoit, P.Q., (General Agriculture), Honours;
Greenberg, Louise, St.-Laurent, P.Q., (Animal Science), Honours;
Grosser, Howard, Boston, Mass., (Plant Science), Honours;
*Gruber, Stephen, Montreal, P.Q., (Plant Science), Honours; University Scholar;
Hansen, Marianne, Lachine, P.Q., (Animal Science), Honours;
Harvey, Robert S., Aylmer, P.Q., (General Agricultural), Honours;
Hayward, Brian, Montreal, P.Q., (Agricultural Economics), First Class Honours; University Scholar;
*Higgins, Susan, Montreal, P.Q., (Animal Science), Honours;
Horst, Gary, St. Jacobs, Ont., (General Agriculture). First Class Honours; University Scholar;
Johnson, Susan, Montreal, P.Q.,(Plant Science), Honours;
Johnston, Susan L., Saint John, N.B., (Agricultural Economics), First Class Honours;
Kau, Elena, Montreal, P.Q.,(Animal Science), Honours;
Kennedy, Gregory, Charlottetown, P.E.I., (Agricultural Economics), Honours;
Klinck, Robert, Ste. Anne de Bellevue, P.Q., (Plant Science);
Labbé, Daniel, Montreal, P.Q., (General Agriculture);
*Lafontaine, Pierre, Verdun, P.Q., (Plant Science);
Lawlor, Eric, Ottawa, Ont., (Animal Science), Honours;
*Leblanc, Robert, Montreal, P.Q., (Plant Science), First Class Honours; Cutler Shield; University Scholar;
Lefebvre, Claude, St-Jean, P.Q., (General Agriculture);
Lemieux, Suzanne, Montreal, P.Q., (General Agriculture), Honours;
*Lépine, Georges, Laval, P.Q., (Plant Science), Honours; University Scholar;
Leung, Hei, Kowloon, Hong Kong, (Plant Science), First Class Honours; University Scholar;
Levine, Fern, St.-Laurent, P.Q., (Animal Science), Honours;
Loisidis, Pierre, Montreal, P.Q., (Agricultural Economics), Honours;
*MacKay, Barbara, Ste. Anne de Bellevue, P.Q., (Soil Science), Honours; University Scholar;
Mazerolle, Monique, Brossard, P.Q., (Plant Science), First Class Honours; University Scholar;
Mellish, Elizabeth, New Perth, P.E.I., (General Agriculture), Honours;
Mercure, André, Longueuil, P.Q., (General Agriculture);
Messier, Cécile, Bedford, P.Q., (Plant Science), Honours;
Morel, Lise, Montreal, P.Q., (General Agriculture), Honours;
*Mumin, Mohamoud, Somalia, (Animal Science);
Norquay, Astrid, Ste. Anne de Bellevue, P.Q., (Animal Science);
Oxby, Debra, Brossard, P.Q., (Animal Science), Honours;
Patterson, Eric, Wolfville, N.S., (General Agriculture), Honours;
Pelletier, Benoit, Sorel, P.Q., (Animal Science), Honours;
Peters, Linda, Ile Perrot, P.Q., (General Agriculture);
Plourde, René, Nominingue, P.Q., (Plant Science), Honours;
Poulain, Guy, St. Hugues, P.Q., (Plant Science), Honours;
Power, Brian C., Kentville, N.S., (General Agriculture);
Pye, Susan, Dartmouth, N.S., (Agricultural Chemistry), Honours;
Rahim, Zenith, Ste. Anne des Lacs, P.Q., (Plant Science), Honours;
*Reader, Wilfred, St. John's, Nfld., (General Agriculture);
Richer, Alain, Montreal, P.Q., (Agricultural Economics), Honours;
Robin, Claude, Ville d'Anjou, P.Q., (Animal Science);
Sadler, John A., Fitzroy Harbour, Ont., (General Agriculture), Honours;
Saint-Pierre, Jules, Québec, P.Q., (Animal Science), Honours;
Sampson, M. Glen, Sydney, N.S., (Plant Science), First Class Honours;
Scullin, Lawrence, Pierrefonds, P.Q., (Plant Science), Honours;
Schechter, Ben, Outremont, P.Q., (Animal Science), First Class Honours; University Scholar;
St. Jean, René, Chomedey, Laval, P.Q., (General Agriculture), Honours;
Sylvestre, Jean, St. Hyacinthe, P.Q., (General Agriculture);
*Tomlinson, Lincoln, Trelawny, Jamaica, W.I., (Agricultural Economics), Honours;
Vidal, Ronald, Pointe Claire, P.Q., (Animal Science);
Weingarten, Allan J., Montreal, P.Q., (Animal Science), First Class Honours; University Scholar;
Wert, James S., Avonmore, Ont., (General Agriculture).

* - *In absentia*

Biological Sciences Division

Candidates presented by Professor R. H. Estey, Coordinator

Brown, E. A. Benjamin, Eganville, Ont., (Microbiology);
*Bussières, Paule, Frelighsburg, P.Q., (Zoological Sciences);
Caunter, Terrence, Roxboro, P.Q., (Environmental Biology);
Doidge, D. William, Mont St-Hilaire, P.Q., (Zoological Sciences);
Dubreuil, Daniel, Ile Perrot, P.Q., (Microbiology), Honours;
Dumont, Luce, Montreal, P.Q., (Botanical Sciences), Honours;
Eddy, Steven, Town of Mount Royal, P.Q., (Microbiology), First Class Honours; Governor General's Medal; Gray Prize in Microbiology; University Scholar
Frank, Diane, Montreal, P.Q., (Microbiology), Honours; University Scholar;
Horvat, Lorenzo, Boulogne, France, (Environmental Biology);
Kenny, M. Gwendolyn, Sydney, N.S., (Microbiology);
Langis, René, Beaconsfield, P.Q., (Environmental Biology);
Lapierre, Josée, Boucherville, P.Q., (Environmental Biology), Honours;
Lardner-Cornett, Janice, Don Mills, Ont., (Microbiology), Honours;
Mauffette, Yves, Baie d'Urfée, P.Q., (Environmental Biology), Honours; University Scholar;
Mayhew, William, Los Angeles, Calif., (Environmental Biology), First Class Honours;
Miller, Janet, Montreal, P.Q., (Microbiology), First Class Honours; Gray Prize in Microbiology; University Scholar;
Otton, Judy, Montreal, P.Q., (Environmental Biology), Honours;
Poprawski, Tadeusz, Ste-Anne-de-Bellevue, P.Q., (Zoological Sciences), Honours; Lockhead Memorial Prize;
Tam, Tat-Yee, Wanchai, Hong Kong, (Microbiology), Honours;
Vezina, Louis, Ste. Foy, P.Q., (Botanical Sciences), Honours.

* — *In absentia*

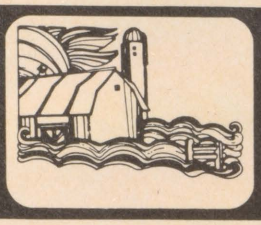
Renewable Resources Division

Candidates presented by Professor A. R. C. Jones, Coordinator

Asquith, Kim, Otterburn Heights, P.Q., (Wildlife Resources), Honours;
*Beairsto, Lorna, Pointe Claire, P.Q., (Wildlife Resources), Honours; University Scholar;
Bertossi, Sandro, St. Leonard, P.Q., (Wildlife Resources), Honours;
Cloutier, Charles, Ste-Agathe-des-Monts, P.Q., (Agricultural Land Planning and Development), Honours;
De Romer, Margaret, Hudson Heights, P.Q., (Wildlife Resources);
Douglas, Charles, St. Catherine, Jamaica, W.I., (Agricultural Land and Development), Honours;
*Gransden, Robert, Pointe Claire, P.Q., (Wildlife Resources);
*Hughes, David, Beaconsfield, P.Q., (Environmental Conservation), Honours;
Juul, Heidi, Ste-Anne-de-Bellevue, P.Q., (Wildlife Resources), First Class Honours; University Scholar;
Kosiuk, Mark, Montreal, P.Q., (Environmental Conservation);
Ladd, Thomas, Pointe Claire, P.Q., (Agricultural Land Planning and Development);
Markel, Rhonda-Lynn, Montreal, P.Q., (Wildlife Resources), First Class Honours; University Scholar;
Naugle, Jonathan, Laceyville, Pa., (Environmental Conservation), Honours;
*Normand, Philippe, Trois-Rivières, P.Q., (Environmental Conservation), Honours;

(Continued on page 20)

The Family Farm



Published in the interests of the farmers of the province by the Quebec Department of Agriculture.

REORGANIZATION OF THE QUEBEC APPLE INDUSTRY

Traditionally recognized as an exporter for the fresh apple market, Québec is facing increased difficulty in having this product accepted. The orchards are old and made up for 71 per cent of only one variety, namely the McIntosh. On the other hand, new varieties, already tested on dwarf and semi-dwarf trees are easier to pick, yield fruit which keep better and which are more appreciated by consumers.

A reorganization of the apple industry is therefore imperative to ensure sufficient income for apple growers and to allow Quebec to recapture the fresh apple and processed products market.

Means

In order to eliminate part of the McIntosh apple trees in existing orchards and replace them with tested cultivars suited to Quebec conditions, the ministère de l'Agriculture du Québec will grant subsidies to eligible growers. This will encourage the introduction of growing methods which will guarantee growers better crops, better keeping and marketing conditions, and increased profitability.

Eligibility

These subsidies are available to any apple grower who is an owner (agricultural operations partnership or agricultural operations corporation within the meaning of the Farm Credit Act) or tenant who is now operating an orchard of at least four hectares of standard apple trees in bearing (of which 50 per cent or more are of the McIntosh variety).

Technical aid

The apple specialist in the region involved or the local agronome will assume the technical organization for growers. The Department also undertakes to supply technical aid as follows:

1. Inspection of the land to be planted;
2. Chemical and structural analyses of the soil and analyses to detect the presence of nematodes, if deemed necessary;
3. Preparation of plans and specifications for the planting of cultivars and for the parts of the orchard to be destroyed;
4. Recommendations on:
   - — Planting systems and density;
   - — Choice of rootstocks and cultivars, and the respective percentage of each cultivar;
   - — Manuring, management, maintenance, and irrigation;
   - — Inspection of cultivars before planting;
   - — Periodic inspection of plantings;
   - — Inspection of nurseries producing recommended cultivars.

Financial aid

For the next five years (1979-1984), the ministère de l'Agriculture du Québec will pay apple growers who have met the requirements of the program a subsidy as follows:

a) Planting in the open: The eligible area is three hectares of a plantation with not less than 500 and not more than 900 trees per hectare. The subsidy is:

- — $2.50 per tree for the first hectare;
- — $2.80 per tree for the second hectare;
- — $3.10 per tree for the third hectare.

b) Staked and trellised ("palissée") planting: The eligible area is three hectares of planting with not less than 900 and not more than 1,500 per hectare. The subsidy is:

- — $2.75 per tree for the first hectare;
- — $3.00 per tree for the second hectare;
- — $3.65 per tree for the third hectare;

N.B. Maximum eligible area per grower is three hectares regardless of the planting system.

Conditions

Growers interested in benefiting by this program must satisfy certain conditions, namely: be owner or a tenant with a lease of at least 15 years (lease subsequent to 1975) of an orchard now having at least four acres in bearing; fully respect the plan prepared by the technical personnel; plant half a hectare (one half at a time in an undivided lot) and the whole three hectares before the end of the program; procure the trees from a source approved by Department specialists

and enrol in the crop insurance program for dwarf and semi-dwarf trees.

Procedure

All interested growers must apply in writing to the Bureau des renseignements agricoles before the 15th of September preceding the year of planting and fill in the questionnaire supplied by the technical staff. This questionnaire will be used as a source of basic information to verify the applicant's eligibility.

If the application is deemed to be in conformity with the requirements of the program, the specialist designated by the Department will inform the grower of all conditions and procedures and will prepare the plans and specifications concerning the orchard in question, in close cooperation with the interested party.

This program was begun in 1978 and came into force April 1, 1979, for a five-year period as regards

The ministère de l'Agriculture du Québec considers the reorganization of the apple industry imperative.

renewal (planting of new-cultivars), that is until March 31, 1984. In the case of destruction of the trees, the program lasts until March 31, 1988.

SILAGE GASES ARE DANGEROUS

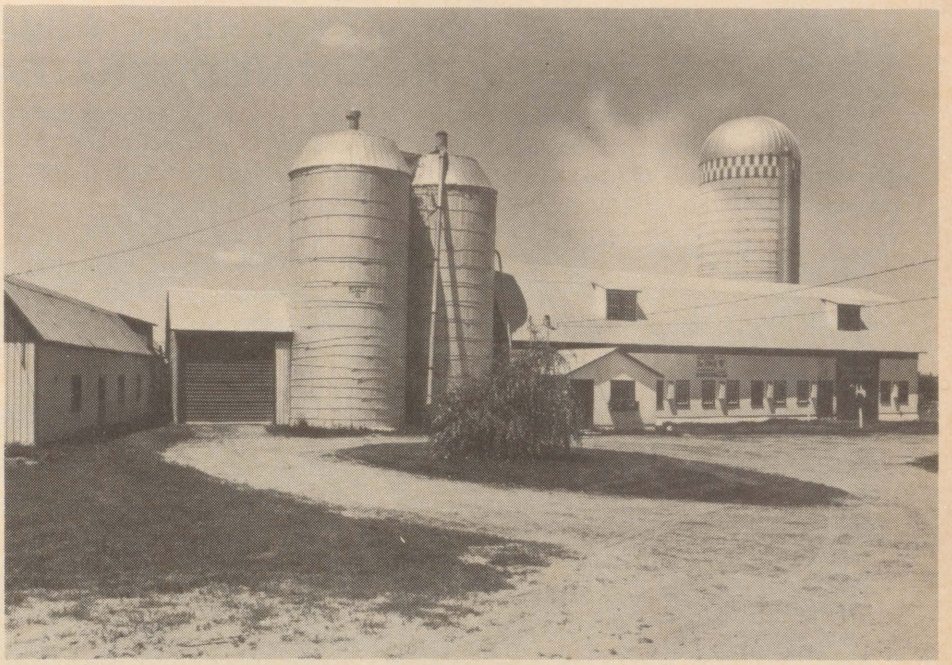
Ensiling is an increasingly common way of harvesting and conserving forage crops. However, this method of keeping grass and corn silages in vertical silos may be very dangerous for uninformed persons. Occasionally, newspapers report cases of persons found dead in silos. These deaths are due to suffocation by some gases formed during fermentation of silage.

The critical period, that is when there is a concentration of nitrogen dioxide, occurs if a silage blower is not functioning — that is to say when the silo is not ventilated. It is during the two days following ensiling that the formation of gas is at its maximum and danger of poisoning is greatest. However, there may also be danger during the three weeks after the silo has been filled.

Precautions

If, for some reason or other, a person has to climb up into a silo during a dangerous period, it would be wise to turn on the silage blower for a least 20 to 30 minutes before entering and for as long as there is someone inside. A few additional precautions may also be taken to avoid accidents.

1. Leave the doors open where there is no silage in order to ensure sufficient natural ventilation.



Be sure to follow proper procedures when entering a silo.

2. Level the top of the silage as soon as the silo is filled. Do not put it off till the next day.

3. If you have to open a door, climb higher than the door. As nitrogen dioxide is heavier than air, it will go towards the door and down the chute.

4. If you have to go into a silo, fasten yourself to a cable, let it hang in the chute and have at least two persons outside.

5. Post a notice, in full view and close to the ladder, prohibiting access to the silo and warning against poisonous gases inside.

Nitrogen dioxide is easily detectable by smell. It is, in fact, irritating and any person exposed to it immediately has a burning sensation in the nose or throat which, in the long run, induces coughing. Therefore, if you have the slightest symptom of this kind, you must immediately leave the place where you are and get outside or into a well-ventilated place.

However, even if you feel better, it would be wise to see a doctor immediately to prevent possible after-effects.

OFFICIAL INAUGURATION OF THE CENTRE DE MISE AU POINT TECHNIQUE POUR CULTURES ABRITÉES AT SAINTE-MARTINE-DE-CHATEAUGUAY

On May 25, the ministre de l'Agriculture du Québec, Jean Garon, inaugurated the Centre de mise au point technique pour cultures abritées. The task of this Centre, located at Sainte-Martine, Chateauguay County, in the heart of an area where there are many market gardeners and greenhousemen, is to adapt to our conditions greenhouse methods already tried out elsewhere.

Besides this work, the Centre will intensify research on heating systems capable of using neglected sources of energy such as used oil, wood waste, or unwanted heat from certain industries. Obviously, the high cost of traditional energy sources represents one of the main limitations to the development of Québec greenhouse culture.

A new approach

Another noteworthy innovation that the ministère de l'Agriculture is trying out at the Centre is a system new to Québec in the field of instruction and organization of farmers. Two groups, each comprising about 20 greenhousemen, have been formed under the regular surveillance of specialists. Thanks to this system, the greenhousemen will be able to benefit immediately by

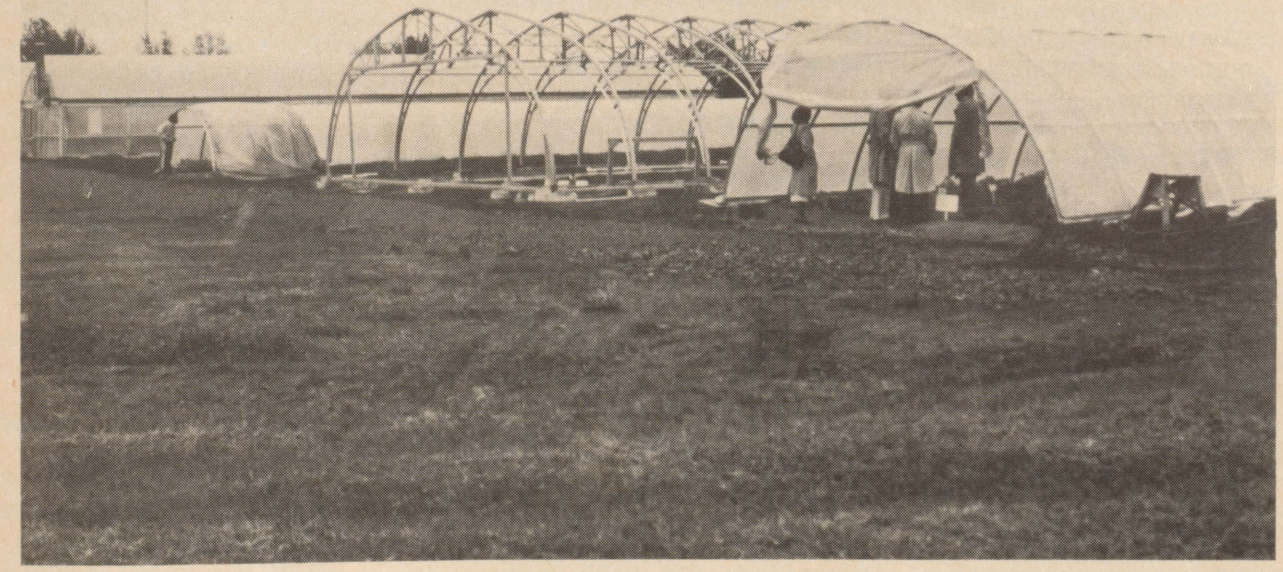
the new proven methods and to increase their yields through improved growing practices.

The groups of greenhousemen already engaged in the project are in regions 6, 7, and 10, that is Saint-Hyacinthe, Chateauguay, and L'Assomption. Every two weeks, they are visited by specialists from the Department. The person in charge of the Centre, Jean-Luc Lussier, and his associates believe that this kind of direct contact — which is in fact continuous training — has greater impact and makes the information available to the producer more valuable.

The means

This is the first time that a team of specialists, using techniques specially designed for the purpose, has been made responsible for perfecting, for immediate application by the producers, technology imported into or invented in Québec in the field of greenhouse crops. According to Mr. Garon, it would be a mistake for Québec to repeat research which has already been done elsewhere when we are greatly lagging far behind in this sector. Québec has only about 160 acres of greenhouses even though we produce respectively 14, 22, and 40 per cent of the greenhouse tomatoes, cucumbers, and potted flowers which we consume.

The Sainte-Martine Centre has only a small number of specialists, but their sole concern is the development of greenhouse crops in Québec. They already have three paired greenhouses, two long tunnels, and another one under con-



struction. The present enterprise thus covers 16,000 square feet and is carrying out combined tests on varieties, fertilization, and irrigation, not to mention the numerous tests of materials and heating.

Projects

For the fall, one-week courses for producers of greenhouse vegetables or flowers or both, are being planned in the various regions of the province. Moreover, the Sainte-Martine Centre is cooperating in a profit and loss study of the recuperation and use of used oil to heat greenhouses. If the results are convincing, a system to collect used oil will be set up by groups of interested producers.

PESTICIDES RECOMMENDED BY MAQ

The Service de la Recherche en défense des cultures announces the 1979 edition of the brochure entitled "Pesticides recommandés par le ministère de l'Agriculture du Québec".

The publication, prepared by J. L. Sauvageau, agronome-entomologist, is mainly intended for agronomes and for crop protection specialists. In addition to the list of insecticides, fungicides, and herbicides recommended for vegetable crops, apple trees, small fruits, etc., it contains the following information on each pesticide: common and commercial names, chemical group, toxicity, tolerance, use, and latest date of application in order to avoid residues.

Persons who wish to receive this brochure should apply to the service de l'Information du ministère de l'Agriculture du Québec, 1140 Taillon, Québec, Que., G1N 3T9.

(Continued from page 14)

Perillo, Lucia, Irvington, N.Y., (Wildlife Resources), First Class Honours; University Scholar;
Prévost, Michèle, Montreal, P.Q., (Wildlife Resources);
Ribek, Geoffrey, Val d'Or, P.Q., (Agricultural Land Planning and Development);
Ritchie, Ian, Pointe Claire, P.Q., (Wildlife Resources), Honours; University Scholar;
Rutherford, Tom, Granby, P.Q., (Wildlife Resources), First Class Honours; University Scholar;
Simpson, Rick, Ste-Anne-de-Bellevue, P.Q., (Wildlife Resources), Honours;
Smith, Charles, Montreal, P.Q., (Wildlife Resources), First Class Honours; University Scholar;
Teose, Mark, Montreal, P.Q., (Agricultural Land Planning and Development) First Class Honours; University Scholar;
Verburg, Michiel, Heemstede, The Netherlands, (Wildlife Resources);
Zidle, Michael, New Glasgow, P.Q., (Environmental Conservation), Honours.

* — *In absentia*

Degree of Bachelor of Science in Agricultural Engineering

Candidates presented by Professor E. McKyes, Chairman, Department of Agricultural Engineering

*Bovell, Richard, Port-of-Spain, Trinidad, W.I.;
*Cambridge, Patrick, Port-of-Spain, Trinidad, W.I.;
Chayet, Monique, St-Laurent, P.Q., Honours;
Comand, Roberto, Montreal, P.Q., Honours;
*Comolet, Henri, St-Laurent, P.Q., Honours;
*Dejene, Demelash, Kaffa, Ethiopia;
Dupont, Yvan, Montreal, P.Q., Honours;
English, Brian, Ste-Anne-de-Bellevue, P.Q.; Honours;
*Greig, Richard, Lachine, P.Q.;
Kelly, John, Ste-Agnes-de-Dundee, P.Q., First Class Honours; University Scholar;
Piou, Jean-Fernney, Montreal, P.Q.;
St-Denis, Jacques, Ile Perrot, P.Q.;
Sturton, Sandra, Mont St-Hilaire, P.Q., Honours;
Tardif, Philip, Laval, P.Q., Honours;
*Travers, Claude, Montreal, P.Q.;
White, Stephen, Pierrefonds, P.Q., Honours;
Wood, Harry W., Charlottetown, P.E.I.

* — *In absentia*

FACULTY OF GRADUATE STUDIES AND RESEARCH

Candidates presented by Professor Valerie M. Pasztor Associate Dean (Records and Registration)

MASTER OF SCIENCE

Asiedu, Samuel K., B.Sc. (Agr.) (McGill), Ghana (Plant Science);
Caldwell, Margaret, A., B.Sc. (Toronto), Toronto (Microbiology);
Celis-Gurria, Rene, Diploma (Mexico), Mexico (Animal Sciences);
Dobrofsky, Shirley, B.Sc. (McGill), Québec (Plant Science);
Hartmann, Harry, B.Sc. (Agr.) (McGill), Romania (Plant Science);
Hynes, Russell, K., B.Sc. (Agr.) (McGill), Québec (Microbiology);
Khadhair, Abdul H. K., B.Sc. (Mosul), Iraq (Plant Science);
Murkin, Henry R., B,Sc. (Manitoba), Manitoba (Renewable Resources);
Ojamaa, Kaie M., B.Sc. (McGill), Québec (Animal Science);
Scott, Thomas A., B.S.A. (Saskatchewan), Saskatchewan (Animal Science);
Tucker, Peter H., B.Sc. (Agr.) (McGill), Québec (Renewable Resources);

DOCTOR OF PHILOSOPHY

Daniel, Robert, B.Sc. (Québec), M.Sc. (Québec), Québec (Agricultural Chemistry and Physics)
"On Some Chemical Changes that Accompany the Ripening of Oka Cheese."
Granger, Raymond L., B.A. (Sherbrooke), B.S.A. (Oka, Mtl.), M.Sc. (Cornell), Québec (Plant Science)
"Factors associated with Spartan breakdown of apple."
Hsiung, Chia-Chi, B.Sc. (Taiwan), B.Ed. (Queen's), China (Entomology)
"A critical examination of Pyrgomorpha species (Orthoptera: Pyrgomorphidae)."
Khayrallah, Walid A., B.Sc. (Am. Univ. Beirut), M.Sc. (Am. Univ. Beirut), Lebanon (Plant Science)
"Selection for seedling vigor and a quantitative genetic analysis of agronomic characters in diallel crosses within and between two cultivars of birdsfoot trefoil (Lotus corniculatus L.)."
Pathirana, Kumarasiri K., B.V.Sc. (Ceylon), M.Sc. (McGill), Sri Lanka (Animal Science)
"The Effect of Type of Carbohydrate on Ruminant Metabolism in Sugarcane Simulated Diets."
Smith, Thomas D. J., B.Sc. (U.N.B.), M.Sc. (Forestry) (U.N.B.), Saskatchewan (Entomology)
"The effects of six insecticides on non-target soil mesoarthropods from pasture on Ste-Rosalie Clay Loam, St-Clet, Québec."

This Month with the QWI

Members of the QWI Executive and Provincial Conveners, seated, left to right: Mrs. S. Washer, Secretary, Mrs. W. Kilgour, President, Mrs. S. Parker, 1st Vice-President, Mrs. L. Henderson, 2nd Vice-President, Mrs. L. French, 3rd Vice-President, and Mrs. G. E. Cascadden, Treasurer. (Miss E. L. Smith, Past President, was unable to attend.) Standing, left to right, Mrs. B. Comba, Welfare and Health, Mrs. R. von Brentani, Publicity, Miss V. Moranville, Home Economics, Mrs. J. Gilchrist, Education, Mrs. N. Rabb, Citizenship, and Mrs. C. Slangen, Agriculture.

Vice-President, FWIC

Mrs. Merlin Lewis of Fordyce branch in Missisquoi County is Quebec's new Vice-President to the Federated Women's Institutes of Canada for Quebec. Mrs. Lewis succeeds Mrs. Jas. Robertson of Hemmingford who handed in her resignation for reasons of health at last year's Semi-Annual Board meeting. Mrs. Robertson's resignation was to be effective at the end of the FWIC Triennial Convention held in Saskatoon in June.
As well as holding offices at both the branch and county levels, Mrs. Lewis was Provincial Convener of Welfare and Health from 1974 until 1976.

Both Mrs. Lewis and Mrs. Robertson attended the FWIC Convention.

Dear Diary,

May 28: I told you last evening that I was ready to go to Macdonald College to attend the Board Meeting and the regular Convention. Skies were overcast this morning as we made our way to Ste-Anne-de-Bellevue, but inside the Centennial Centre Lounge everything was bright and cheerful. A great part of it is due to the friendliness and congeniality of our Executive and board members.

The attendance was 25: 5 Executive members being present, and 17 counties and 5 Provincial Conveners answering the roll call. After the adoption of the minutes, read by our Secretary, Sheila Washer, the question of reports came up. We do seem to have a problem knowing when they should be sent in. We must remember that we are in an organization with different levels and it is these reports that help to keep the link between these levels strong. Convener's reports must go from the County to the Provincial Convener directly after the March meeting. The deadline for the Federated Report is April 15, and that is final. The branch conveners must send to the county conveners an interim report after the September meeting and after the February meeting. I use the word must instead of should; it does seem to have more urgency. It does make things a bit difficult for county conveners if the branch reports do not come in on time.

Mrs. Cascadden reminded the members that the Quebec Service Fund should be supported by all members. She also reminded us that it is strictly a voluntary fund. As one example, payment for the Macdonald Journal, which has been affected by the rising cost of living, comes out of the Service Fund.

Another example of inflation having crept into our organization resulted in a suggestion that the branch increase the fees to the county. It does seem as if the county does not have as many opportunities as the branch to make money.
Dear Diary: I think I'll forget about business for a little while — right now I just can't think of any more in that line. The tea for the Board this year was held in the new Macdonald-Stewart Building, which gave us an excellent opportunity to see the new building as well as to meet and chat with Mrs. Lloyd, wife of the Vice-Principal and other wives of Faculty staff, and I must tell you about our visit to the handicraft room. There was a wonderful display — so many beautiful articles

Handicrafts Judge, Mrs. L. Murphy, receives a token of appreciation from Mrs. R. Knights.

Mrs. M. Lewis is Quebec's new Vice-President to the FWIC.

Mrs. R. MacMillan, FWIC Secretary, accompanied by Mrs. M. Thompson, delighted the audience with her musical selections.

Members of the Executive and guests, left to right, Mrs. S. Washer, Dr. Shirley Weber, Director of the School of Food Science, Mrs. L. Henderson, Mrs. H. L. Noblitt, Vice-President, FWIC, Mme Madeleine Buczowski, l'AFEAS, Mrs. Kilgour, Mrs. Cascadden, Mrs. Parker, and Mrs. Rousseau, also of l'AFEAS.

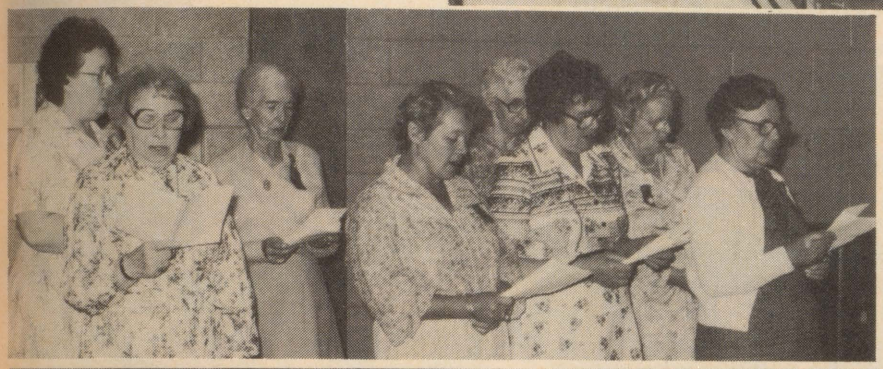
that one could not decide where to linger the longest. There were many book marks, so varied; some did tell a story about our Province and I'm sure all will be appreciated by delegates from across Canada at the Triennial Convention in Saskatoon. A crocheted wall hanging, made by Mrs. Slangen from Brome, caught my eye. In the background was a scenic picture, and in the foreground were three detachable dolls, all different. Mrs. Slagen said the idea was original, and the whole thing made with leftover wool.

Then Mrs. Knights's button collection was worth studying. Mrs. Knights said that Mrs. H. Surtees, who is 88 years old, gave her the idea. There were over 4,000 buttons on display. There were mother of pearl, smokey pearl, jewel buttons, glass, cut steel, regular ivory, pewter, calico, Dorset and picture buttons, and quite likely I haven't remembered them all. Mrs. Knights said that when her husband was overseas he sent home buttons and also she has received Christmas cards with a button on them — the sender was a collector also.

A good idea came from Mrs. Keith McCaig, Argenteuil County, wondering if we could have a sign showing that there is a WI in the area. Mrs. Kilgour asked county presidents to take this idea back home. It would be nice to see a picture of our crest, or some other emblem or sign, showing that there is a branch in the locality.

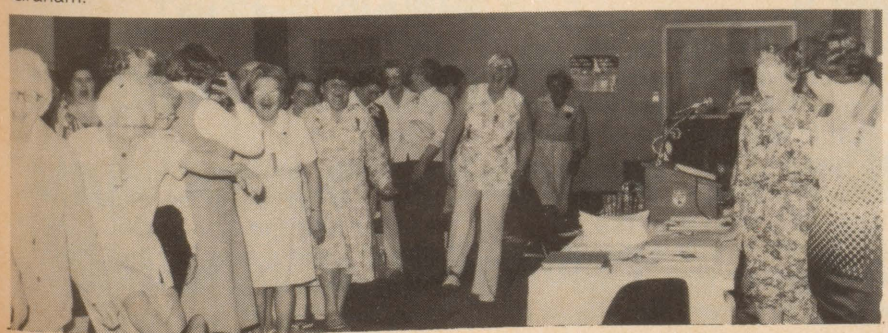
We need new members — young women. Young mothers are busy but WI work is so interesting and sort of a sense of accomplishment

Members from Brome and Missisquoi entertained on Wednesday evening. Susan Doherty, from Dunham, gave an excellent performance on the piano, and, below, eight ladies from Sutton sang a marvelous selection of songs.



A rare moment in a busy schedule — mother and two daughters get together for breakfast, left to right, Mrs. S. Parker, QWI 1st Vice-President, Mrs. C. Pitman, visiting delegate from Belvidere, and Mrs. A. Lord, Stanstead County President.

Above and Below, members enjoy the entertaining breaks provide by Miss Hilda Graham.



goes along with the good times, and we meet so many incredible people.

It is late and a busy day ahead.

May 30: At breakfast we met members of the Canadian Nature Federation, who were holding a convention at the College at the same time. They seemed interested in WI work, and we found out both groups had much in common.

This will be an interesting day. Over at the lounge delegates were streaming in — we had 158 in all when the roll was called. We all regretted that no one could come from the Magdalen Islands, but weather conditions were not favourable.

Betty Comba, from Matagami, was very busy laying out material on a small table. "No, no", she said, "this is not an effort — it is a pleasure. Health and Welfare has been good for me".

Then I noticed Mrs. Bronson who will be 93 in July. She has missed only one convention and that was last year when she was in hospital having a pace-maker placed.

Dr. Lloyd, Vice-Principal, welcomed the Women's Institutes to the College. He said it seems as if our convention is part of the normal routine on the campus. He asked us to help in recruiting students for Macdonald and said that both organizations have the same aims.

Our speaker for the morning was Dr. Shirley Weber, Director, School of Food Science. Professor Weber said she was interested in WI, thanked us for the awards we donate to the College students and said she followed the news in our WI pages in the Journal. Dr. Weber referred to pioneer ladies of the 19th century who had helped improve the lot of American and Canadian women. It is difficult for us to imagine the obstacles a young woman of that era had to overcome to obtain an education. Two of the ladies mentioned were Sara Josepha Hale and Ellen Swallow Richards. One of the things that I remember Dr. Weber telling us about the former lady was that she was the author of "Mary Had a Little Lamb". Ellen Swallow

enrolled in college but a common question at that time was "Can a girl get a college education without injuring her health?" That thought rather impressed me. Our Mrs. Hoodless invited Mrs. Ellen Swallow Richards to speak at Kingston, so all this had an impact on Mrs. Hoodless.

Gradually there has been an interest in homemaking and being a dietitian has become work with prestige. Perhaps I shouldn't take time for these lines but I appreciate them: "train a housekeeper to think; she will make not only a better housekeeper but also a more contented one". Dr. Weber endorsed Dr. Lloyd's thought that we, the Women's Institutes, should be emissaries for the College, encouraging our young people to attend.

Mrs. L. Henderson, 2nd Vice-President, thanked Dr. Weber, and we returned to Stewart Hall for lunch. This is a jolly time — people are visiting with friends they haven't seen for a while, quite possibly since last convention.

For the afternoon session, Mrs. Gwen Parker, 1st Vice-President, chaired the meeting. Hilda Graham was at the piano playing lively music while we assembled. After some routine business, Mrs. L. Henderson introduced our speaker, Mrs. H. L. Noblitt, Vice-President F.W.I.C. Her address was timely as she spoke about laws, especially how they affect children. Some of her thoughts: every right carries with it a responsibility or else it become licence; somethings about children we can't legislate. There is a lot of truth in that — we can't legislate love and trust and respect. Another of Mrs. Noblitt's ideas was that children need guidance in choosing high school courses, and this next one applies to us all: as human beings, we can only develop so fast. Mrs. Kilgour thanked Mrs. Noblitt for her address and we listened to the various conveners' reports. All in all there is so much accomplished by the Women's Institute. I hope it always remains strong and productive.

As usual we look forward to this evening's entertainment, so we waste no time after supper. I like the idea of two hostesses being at the door of the lounge to greet us — pretty dresses and gloves, and smiles. It adds to the evening, indeed to all the sessions.

Lucy French, who has been a very active Citizenship Convener, was busy with material for CanSave. June Kelly, a new member of the West Island branch, was helping Lucy and said she thoroughly enjoyed the work. Before the evening program started, I was talking with Mona Charters, a county secretary and a Charter Member of the Junior Girls' Institute, who said she found the day's program very interesting and mentioned the reference Dr. Weber had made to Vassar College. Another lady, Mrs. Helen David, a Charter Member of Fordyce branch, told me she had enjoyed both speakers.

Our special guest for the evening's entertainment was Mrs. Rona McMillan, FWIC Secretary and well-known fiddlist. Accompanied by Mrs. M. Thompson on the piano, she delighted us with music ranging from the sweet and pensive to the gay and sprightly. When the lively notes of one tune were heard (I think it was the Irish Washerwoman), two of our ladies, Mrs. E. Davis from Gaspe and Bev. Morrison from Arundel were on the floor stepping to the music. In a short time, Mamie Harvey from Missisquoi, Bertha Enlow and Elizabeth Hutchinson from Argenteuil joined the others. I spoke to Mrs. Davis and Mrs. Morrison and they said they had not met until they found themselves on the dance floor. Music has its own special charms.

Members from Brome and Missisquoi Counties entertained us also with musical selections. Eight ladies from Sutton, with Mrs. Knights at the piano, rendered three songs. Susan Doherty from Dunham, a young Institute member, gave an excellent performance on the piano. Also four New Canadians of German, Austrian, Dutch and Swiss descent sang, first in German (but language is not a barrier when it is music) and then a hymn in English. After a brief intermission, à short skit, put together by Mrs. Irene Williams, with Mrs. Edith Shufelt, Mrs. Murray Mason, and Mrs. Kay Paquette, was presented. The members and guests certainly enjoyed the excellent entertainment provided this evening.

Both evenings, the members of the West Island branch served lemonade, coffee, tea, sandwiches, and squares. This was a pleasant interlude, giving the ladies an opportunity to visit with friends.

Now Diary, I am not going to write about the reports of the different committees — I am really not much good at that. I do enjoy meeting people and listening to what they have to say.

We are fortunate to have Hazel Clarke taking pictures and answering questions about the Journal, etc., and Hilda Graham stepping in when needed with a little entertainment. Hilda, in your stories you never let the women down. Also, we are proud of our Executive, many of the members have echoed that sentiment.

Before I close, though, I want to mention a short visit I had with Mrs. Charles Pitman, a lovely lady from Belvidere branch in Sherbrooke County and mother of two of our very active WI members, Aileen Lord and Gwen Parker. I know she was proud of her daughters today. Years ago, when I taught in Sherbrooke High, I was invited to her home. She was a kind hostess then and still is a gracious lady. It seems as if the years have added something very nice and endearing to Mrs. Pitman. She is a good example of a WI member.

This will be my last letter to you in this respect, but I wish the best for the Macdonald Journal. This magazine is very important to our organization. We may just have to sacrifice a little to keep it in operation.

All for now, dear Diary.

Gladys C. Nugent,
QWI Publicity.

By the way, for those of you who asked, "What are those beautiful trees outside the Centennial Centre?", the answer is that they are an ornamental species of hawthorn. (Hazel M. Clarke)

O'Keefe

Would like to take this Opportunity to Thank all those who Supported the Plowing Match & Farm Machinery Demonstration 1979 At the Agricultural Research Station in St. Hyacinthe

Profite de cette occasion pour remercier tous ceux qui ont supporté le Concours de Labour et les démonstrations d'équipement de ferme 1979 à la Station de Recherches Agricoles de St-Hyacinthe

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